

images, and the appearance of water. On advancing up the ascent, so as to raise the eye, and thus diminish the angle of incidence of the rays which entered it, the lake contracted, appeared discontinuous, as if studded with islands, and disappeared. It reappeared again on placing the eye in the first position.

The same appearance was observed on the following Sunday, under similar circumstances.

The phenomenon is a well-known one; but every instance of its occurrence in a locality where it has not been previously observed is worthy of record, and the collection of trivial scientific facts is one of the objects of a scientific society.

ART. IV.—*On the Cestracion Philippi (Port Jackson Shark), Trigonina and Terebratulina of the Australian Seas.* By SIZAR ELLIOTT, Esq.

[Read before the Institute 4th March, 1857.]

THIS fish belongs to the Placoid order, or Sharks, (by the arrangement of M. Agassiz), and forms the only living example of the family of Cestracions (*Cestraciontidae*), the members of which are distinguished from all other sharks by having the teeth flattened, and formed for grinding. Numerous genera of this family are abundant in the Mesozoic rocks of Europe, and all Naturalists and Geologists seemed hitherto to have been of opinion that they abound also in the Palaeozoic Rocks; but Professor M'Coy, in his last work on the "British Palaeozoic Fossils," proves that the succession of the teeth in the Mountain Limestone Genus *Cochliodus* (which was hitherto supposed to be a fossil-shark's jaw of the type of cestracion, and which furnished the key to Agassiz for grouping all the Palaeozoic blunt fish-teeth of the Palaeozoic Rocks with the Cestracions), was from below upwards, and that they were not on a rotating membrane, succeeding each other from behind forwards, so that, according to Professor M'Coy, the supposed Palaeozoic cestracions belong in fact to the *bony* fishes, and not to the sharks at all: in other words M. Agassiz is in error in grouping the blunt fish-teeth of the mountain limestone with the blunt fish-teeth of the Mesozoic Rocks; the former having their teeth progressing from behind forwards, the latter from below upwards.

However the fact of greatest interest remains of the great

abundance of the true Cestracion fishes in all the Mesozoic Rocks, particularly in the Oolites, and that the only living representative of the family inhabits the Australian Seas, an example of which is now on the table. This specimen was procured in December last, from a fishing station near Mordialloc, about fourteen miles from this city, and is called by the fishermen a Groper. From the close proximity of the mouth to the tip of the head it is well calculated for rooting, while the teeth can bruise or grind such Molluscs and Crustacea as may come in its way with facility; but I should conceive that sea weed would form the principal portion of its food.

In the same rocks in Europe the *Trigonia* (*Trigonus*, *triangular*,) abounds; shells forming a peculiar family (remarkable for the pair of diverging sulcated teeth); of which also the only living type is found in our seas. There are only two species of this shell well known, *T. Margaritacea* and *T. Pectinata*. The present specimens belong to the Society's collection, and were dredged in the harbour of Port Jackson, New South Wales, in about sixteen feet water, at low tide, from off the tail of a bank leading into deep water; the bottom was composed principally of dead broken shells and sand, the effect of the under current or drift, mixed with which the *Trigonias* were found, and could easily be groped out by the shark now under consideration. I believe they are to be met with only in this locality in the harbour. The interior of the shell is highly iridescent Mother-o'-Pearl. They are much prized by collectors. There are upwards of twenty fossil species, but they are not found below the Lias formation.

Terebratulæ, (*Terebratus*, *bored*,) agreeing in generic character with the living Australian ones, also abound in the Oolite Rocks of Europe, but are not so interesting as the above, because examples (though rare) are found in the seas of all parts of the world, and in all the rock formations from the Silurian to the Tertiary inclusive.

The specimens before you were also procured in the harbour of Port Jackson, from under rocks on the borders of the harbour, by inserting the arm into the cavities, where they can be detected hanging by a short fleshy tendon passing through the hole in the larger and upper valve. I mention this fact from the circumstance that Lamarck and others consider that, from the locality of the *Fossil* species of this genus, these shells may be presumed to inhabit the sea at a great depth; and Professor Owen remarks that the

Trigonia and Terebratula are still in existence, which fed the fishes of the Oolitic era. From the locality from whence the present specimens were obtained I should not conceive they are sought after by the Port Jackson Shark in such shallow water, and am not aware (other than the fact that they are discovered in a fossil state in the same localities) that they are, or were, consumed as food by the fish now under consideration. They have a curious kind of internal skeleton, as it may be termed, consisting of a flattened calcareous loop, with other pieces diverging from it, which are considered to be supports to the animal's body. There are sixteen recent, and numerous fossil species.

The oldest fossil Mammalia are in the Oolite, also forming peculiar genera, belonging to the insectivorous Marsupialia, such as live now in Australia only.

ART. V.—On a New Mineral from M' Ivor. By R. BROUGH SMYTH, Esq., C.E., F.G.S.

[Read before the Institute, 4th March, 1857.]

THE mineral described in the following analysis was forwarded to me by Philip Chauncey, Esq., District Surveyor, Heathcote. It occurs commonly in the quartz veins in small quantities, and is believed by the diggers to be *Molybdenum*. As my duties at present prevent my Mineralogical studies, I handed the specimens to George Ulrich, Esq., who has prepared the analysis which I now submit to the members of the Philosophical Institute.*

“The mineral is of a steel-grey colour, with metallic lustre, opaque, brittle; the fracture is conchoidal; the streak—powder dark-grey, or black; hardness 2·5—3; spec. grav. (?)

“Before the blowpipe, on charcoal, this ore smelts very easily to a metallic globule, with a sort of boiling motion, emitting at the same time dense white fumes, with a weak smell of sulphurous acid. Close to the mineral the charcoal bears a deep yellow crust, which gradually changes into white; then comes a small uncoloured ring, and again a small blueish

* Mr. Ulrich was not aware of my intention to publish these results until after his analysis was published, or his examination would have been more complete.—R. B. S., 11th July, 1857.